

In the Drawings:

Please replace Sheet 1 bearing Fig. 1 of the original drawings with the enclosed Replacement Sheet. Fig. 1 has been revised by replacing the duplicate reference character "A" with --AC-- in conformance with the amended specification. Also in Fig. 1, certain informal handwritten reference characters have been replaced by printed reference characters with better clarity. Acceptance and entry of the Replacement Sheet are respectfully requested. Original Figs. 2A, 2B, 2C, 3, 4, 5 and 5A on sheets 2 and 3 of the original drawings are maintained unchanged.

**[RESPONSE CONTINUES ON NEXT PAGE]**

REMARKS:

- 1) Referring to item 10) of the Office Action Summary, and section 2 on page 2 of the Office Action, the Examiner's attention is directed to the enclosed Letter to the Official Draftsperson accompanied by a Replacement Sheet bearing a revised Fig. 1 of the drawings. The inadvertent duplicated reference character "A" has been changed to --AC--. The Examiner's pointing-out of this error is appreciated. The clarity of a few other reference characters has been formally improved. Acceptance and entry of the Replacement Sheet bearing revised Fig. 1 are respectfully requested. The other original drawings sheets are maintained unchanged. Withdrawal of the objection to the drawings is respectfully requested.
- 2) Referring to section 3 on pages 2 to 3 of the Office Action, the specification has been amended as necessary. The Cross-Reference to Related Applications has been updated by indicating that the parent application has been abandoned. The inadvertently duplicated reference character "A" identifying the aircraft has been changed to --AC--. These merely editorial amendments do not introduce any new matter. Entry thereof is respectfully requested. Withdrawal of the objection to the specification is respectfully requested.
- 3) The claims have been amended as follows.

Claims 2, 9 to 12, 19 and 20 have been canceled.

Independent claim 1 has been amended to incorporate features supported in original claims 2, 9, 10, 11 and 12.

The dependency of claims 3 and 7 has been updated in view of the cancellation of prior claim 2.

Claim 4 has been amended to clarify the configuration of the shroud enclosing an air plenum outwardly around the toilet bowl, and claim 6 has been amended to clarify the arrangement of the pressurized or driven air source as feeding air into the air plenum, for example as supported in original Fig. 2B.

Independent claim 13 has been clarified as directed to an aircraft toilet system and has been amended to incorporate features supported in original claims 19, 20, and 21 and in the specification at page 19 line 2.

Claims 18 and 21 have been amended for conformance in view of the amendment of the independent parent claim 13.

Claim 22 has been clarified to be directed to an aircraft toilet system and has been amended to incorporate features supported in original claims 10 and 21 as well as the specification at page 19 line 2.

Independent claim 23 has been clarified to be directed to an aircraft toilet system and has been amended to incorporate features supported in original claim 10.

In view of the above mentioned original support, the present claim amendments do not introduce any new matter. Entry and consideration thereof are respectfully requested.

- 4) Before particularly addressing the asserted prior art rejections and comparing the claim features to the prior art disclosures,

the invention will first be discussed in general terms to provide a background.

It has long been known to provide vacuum toilet systems on aircraft. Such aircraft vacuum toilet systems have previously always been equipped with means for providing a flushing liquid (generally a disinfectant and deodorizing solution in water) into the toilet bowl for flushing and rinsing urine and fecal waste from the toilet bowl. During this flushing operation, the accumulated waste material in the toilet bowl is sucked by vacuum through a waste pipe into a waste collection tank.

For the first time, the present invention has provided an entirely waterless vacuum toilet system in an aircraft, which entirely excludes all means of supplying a flushing liquid into the toilet bowl. In previous vacuum toilet systems, this could not have been achieved and was not achieved because urine and fecal waste would remain adhering to the surfaces of the toilet bowl. That would create malodorous, unsightly, and unsanitary conditions of the toilet bowl. To avoid these problems, it has previously always been necessary in aircraft vacuum toilet systems to provide at least some rinsing and flushing liquid, if even only a small amount (e.g. 0.2 liters per flush).

Through a combination of features, the inventive aircraft vacuum toilet system has made it possible to "air flush" the toilet without providing or using any flushing and rinsing liquid, thus a truly "waterless" aircraft vacuum toilet system. Thereby, the overall toilet system can exclude all means of supplying a flushing liquid into the toilet bowl. This is

achieved especially by the combination of two significant features as follows.

The first significant feature according to the invention is the provision of a true nanocoating on pertinent waste-contacting surfaces of the toilet system, such as the inner bowl surface of the toilet bowl. Such nanocoatings (e.g. formed by a suitable nanotechnology process to have a film thickness less than 10 nm as well as a high degree of order and a low surface energy as result from the nanotechnology process) have been shown to be extremely hydrophobic and especially to exhibit a high repellence or anti-adhesion characteristic with respect to urine and fecal waste particles. For example, the pertinent nanocoatings exhibit a wetting angle preferably in a range from 0° to 25° with respect to droplets or particles of the waste material. For this reason, the waste material simply does not stick to the nanocoated surfaces and seems "almost magically" to slide off of these surfaces.

The second significant feature according to the invention is the arrangement of air directing means such as an air jet arrangement, an air nozzle arrangement, an annular air gap, or the like, in combination with a vacuum or suction source that induces a suction airflow into the toilet bowl due to a prevailing pressure differential, such that the airflow is directed along pertinent waste-contacting surfaces of the toilet bowl downwardly toward the toilet bowl outlet. This induced directed airflow works together with gravity to "sweep" the urine and fecal waste materials from the toilet bowl surfaces toward the bowl outlet. Due to the nanocoating, the waste materials do

not adhere but rather slide easily and cleanly to the bowl outlet for example.

As will be discussed below, the prior art has never provided and would not have suggested such a combination of features, and thus could not have achieved and would not have suggested the present inventive waterless vacuum toilet system for an aircraft.

- 5) Referring to section 7 on page 4 of the Office Action, the rejection of claim 1 as anticipated by or obvious over US Patent 4,928,326 (Olin et al.) is respectfully traversed.

Independent claim 1 has been amended to incorporate features from prior claims 2, 9, 10, 11 and 12. Those claims had not been subject to a rejection based on Olin et al. alone. Particularly, for example, Olin et al. do not disclose and would not have suggested the provision of a nanocoating being a thin film that has a thickness less than 10 nm and that is highly ordered and waste material repellent as formed by a nanotechnology process. Thus, the present rejection cannot be maintained.

Moreover, the Examiner's assertion that "*Olin et al. clearly show only air flushing ... and do not disclose any use of flush liquid at all with their system*" is respectfully traversed as inaccurate and out of context.

In describing the improvements of a vacuum toilet system they aim to provide, Olin et al. do not particularly discuss the use of a flushing or rinsing liquid. But that is because the improvements provided by Olin et al. have nothing to do with the use of or elimination of a flushing liquid. Instead, the improvements provided by Olin et al. relate only to reducing the

noise level of the vacuum airflow of otherwise typical and conventional vacuum toilets by providing an improved valve arrangement with an air bypass (see col. 1, lines 18 to 52). It is clear that Olin et al. simply build on and further develop otherwise conventional toilet systems existing at that time (the late 1980's).

For example, Olin et al. expressly disclose that their invention can be used with a special embodiment of a sewer valve in a vacuum sewer arrangement such as an aircraft vacuum toilet system "where the amount of flush water is extremely small, only about 0.2 liter or less. In this case, the sewer valve must function with a very high accuracy" (col. 2, lines 23 to 27, emphasis added). From this it is clear that the basic embodiment of Olin et al. with a simpler sewer valve is intended to work with a vacuum toilet using even more than 0.2 liters of flush water per flush and thus does not require such high accuracy of the sewer valve. Then, in extremely demanding situations, such as aircraft vacuum toilets, which use only a small amount of flush water, a special embodiment of the sewer valve must be used to carry out the Olin et al. inventive improvement (col. 2, lines 20 to 27).

In this regard, Olin et al. expressly refer to US Patent 4,713,847 (Oldfelt et al.'847) (see col. 2 line 28 of Olin et al.), to which the Examiner's attention is directed. The referenced US Patent 4,713,847 expressly describes in detail "modern vacuum toilet systems" prevailing in the late 1980's, which expressly and necessarily use rinse and flushing water (see col. 1, line 30 to col. 2, line 17; col. 3, lines 30 to 42; col.

4, lines 5 to 20; etc. of US 4,713,847). This extrinsic evidence, which is expressly referenced by Olin et al., further makes clear that the Olin et al. system operated with flush water, and that a person of ordinary skill in the art would have read the Olin et al. disclosure in this context.

Olin et al. further reference several older patents providing sewer valve assemblies that can be used in the Olin et al. arrangement (col. 3, lines 29 to 33 of Olin et al.). Those cited patents also refer to waste water being conveyed through the valve (see e.g. US Patent 4,376,444 (Michael)). From this additional extrinsic evidence, it is further clear that the Olin et al. system does nothing to change the basic features of the existing prior art at the time, which all involved the use of rinsing and flushing liquid in a vacuum toilet system in an aircraft.

For the above reasons, the Olin et al. reference does not anticipate and would not have made obvious an aircraft vacuum toilet system as presently claimed, expressly excluding all means of supplying a flushing liquid into the toilet bowl.

The Examiner is respectfully requested to withdraw the rejection of claim 1 as anticipated by or obvious over Olin et al.

- 6) Referring to section 8 on pages 4 to 5 of the Office Action, the rejection of claim 2 as obvious over Olin et al. in view of US Patent 5,245,711 (Oldfelt et al.) is respectfully traversed.

The features of prior claim 2 have been incorporated into amended independent claim 1.



Oldfelt et al. disclose a vacuum toilet system that expressly includes means of supplying a flushing liquid into the toilet bowl, particularly involving a gray water storage reservoir (338) which receives used gray water from the hand wash basin (40), and a rinse water supply pipe (328) that feeds the stored gray water via a rinse water distribution pipe (320) into the toilet bowl (abstract; col. 7, lines 47 to 68; Fig. 5; etc.).

This is further evidence, in combination with Olin et al., that previous conventional aircraft vacuum toilet systems all were provided with means for supplying a flushing liquid into the toilet bowl, and were intended to be flushed with the use of a flushing liquid. While Oldfelt et al. additionally disclose that the flushing operation can still be carried out using only air in the unlikely and unintended event that the gray water reservoir should run dry (col. 10 lines 7 to 20), this does not change the fact that Oldfelt et al. expressly do provide means for storing and introducing rinse and flushing water into the toilet bowl. Any conventional system that has a water reservoir for supplying flushing liquid could malfunction or run dry and thus fail to provide the flushing liquid in an unintended unusual situation. That, however, would not have provided a motivation to omit the very system that is expressly provided according to Oldfelt et al., namely a system for storing and reusing gray water that drains from the hand wash basin.

In other words, the overall context and teachings of Oldfelt et al. necessarily and expressly require the provision of means for supplying a flushing liquid into the toilet bowl, and the disclosure that the system still works in the unusual, unlikely,

unintended and temporary event of the reservoir running dry would not have suggested or enabled a system that completely omits the reservoir and water supply pipes in the first place. For example, in the Oldfelt et al. system, as soon as a person uses the hand wash basin, more water would accumulate in the reservoir (338), so that the toilet bowl could be completely rinsed, cleaned and sanitized with the water on the next flushing cycle, to remove any residual waste material adhering to the toilet bowl surfaces.

Since Oldfelt et al. do not disclose and would not have suggested a special nanocoating on the toilet bowl for preventing the adhesion of waste, all previously known surfaces of toilet bowls would have remained contaminated with some adhering waste until the next liquid rinsing cycle. The assertion that the airflow by itself is "quite effective at cleansing the toilet bowl" is not a suggestion that the airflow by itself is completely effective and completely adequate at cleansing the toilet bowl without ever providing any rinse water, and in fact entirely excluding all means of supplying flushing liquid into the toilet bowl as recited in present claim 1.

Even a combination of Olin et al. and Oldfelt et al. would have provided only suggestions toward the intentional provision and use of a flushing and rinsing liquid in view of the above discussed disclosures. Olin et al. expressly state that aircraft vacuum toilets use a small amount of flush water (e.g. about 0.2 liters or less), and Oldfelt et al. expressly provide a complex system for storing and introducing used gray water into the toilet bowl.

For the above reasons, the Examiner is respectfully requested to withdraw the obviousness rejection applying Olin et al. in view of Oldfelt et al., as inapplicable against any of the present claims.

- 7) Referring to section 9 on page 5 of the Office Action, the rejection of claims 3 to 8 as obvious over Olin et al. and Oldfelt et al. further in view of US Patent 2,700,775 (Martin) is respectfully traversed.

Claims 3 to 8 depend from claim 1, which has been discussed above in comparison to Olin et al. in combination with Oldfelt et al. The additional disclosure of Martin considered together with the preceding references would not have suggested the features of independent claim 1, much less the further features of claims 3 to 8.

Martin discloses an incinerating-type toilet, which heats liquid and solid wastes so as to incinerate the waste material to form residual ash, and which generates ozone to destroy odors and the like. The Examiner has referred to Martin for allegedly disclosing a shroud enclosing an air plenum around a toilet bowl. Martin discloses only a porcelain bowl portion (1) mounted on a porcelain base portion (4), whereby the bowl portion encloses the bowl interior chamber therein, which leads through an exit flue (14) to a motor-driven suction fan (17). That represents the bowl outlet of the toilet bowl, because the incineration of the waste material forms gaseous incineration byproducts that are ejected out of the toilet bowl by the suction blower. Martin optionally provides electrodes in the form of a metallic liner

(52) arranged within the porcelain or plastic toilet bowl proper (51).

Contrary to present claim 3, Martin does not disclose and would not have suggested a shroud surrounding and enclosing the toilet bowl so as to form an annular air gap between the upper rim of the toilet bowl and an air-guiding flange rim of the shroud that extends radially inwardly over the upper rim of the toilet bowl and downwardly into the toilet bowl, whereby the annular gap directs the airstream as a sheet of air downwardly along the interior surface of the toilet bowl. The basic embodiment of Martin does not include any shroud, and in the embodiment with the metallic electrode liner, the porcelain bowl proper cannot be regarded as a shroud according to present claim 3, because it does not include an air-guiding flange rim configured and arranged as presently claimed.

Further in comparison to present claims 3 to 8 it is noted that the Oldfelt et al. toilet system includes a shroud (300) around the toilet bowl (2), but this shroud merely encloses a dead air space between the toilet bowl and the shroud. The induced airflow passing into the toilet bowl expressly does not flow via an air plenum space within the shroud, but rather flows in through an air supply member (302) having bores (352), grooves (358) and a channel (306) (see Figs. 5 and 6 and col. 8, lines 6 to 22). Thus, while Oldfelt et al. provide a shroud, the specific structural teachings are essentially contrary to the improved features of present claims 3 to 8.

Olin et al. also disclose a structure that could be said to involve a shroud around the toilet bowl, but once again merely

a dead air space is trapped between the shroud and the bowl. Air is actively introduced through a separate air tube (18) into the toilet bowl (see Fig. 1 and col. 4, lines 57 to 68).

Thus, even the combined teachings of all three references would not have suggested the features of present claims 3 to 8. The Examiner is respectfully requested to withdraw the rejection of claims 3 to 8 as obvious over Olin et al., Oldfelt et al. and Martin.

- 8) Referring to section 10 on page 5 of the Office Action, the rejection of claims 9 and 10 as obvious over Olin et al. and Oldfelt et al. further in view of US Patent 6,207,236 (Araki et al.) is respectfully traversed.

The subject matter of claims 9 and 10 has been incorporated into independent claim 1, which has been discussed above in comparison to Olin et al. and Oldfelt et al.

As admitted by the Examiner, the combination of Olin et al. and Oldfelt et al. would not have suggested the presently claimed nanocoating. In this regard, the Examiner has turned to Araki et al. Araki et al. disclose various coatings that are said to be water repellent on a huge variety of articles including a flush toilet and a chamber pot (as well as a bread oven, a rice cooker, glass for trains, air conditioners, gravestones, telephone booths, utility poles, solar systems, pantographs, concrete blocks, and apparently at least almost every other article of manufacture ever conceived by man).

Nonetheless, the disclosed coatings are not true nanocoatings as presently claimed. Particularly, for example,

these coatings do not have a thickness less than 10 nm, and are not highly ordered and waste material repellent as formed by a nanotechnology process. To the contrary, the disclosed coatings are much thicker than true nanocoatings, particularly having a thickness in the range from 0.01  $\mu\text{m}$  to 100  $\mu\text{m}$ . Thus, the typical range of thicknesses teaches drastically away from nanocoating, and even the thinnest imagined coating of 0.01  $\mu\text{m}$  is thicker than the presently claimed range (see col. 11 lines 54 to 56).

Thus, claim 1 incorporating these features from prior claims 9 and 10, would not have been obvious. Also, the substantially and unexpectedly improved waste repellent characteristic of a true nanocoating would not have been expected or achieved through the coating teachings of Araki et al. Thus, the waterless toilet system according to the present invention could not have been achieved and would not have been expected to be successful, due to the adhesion of waste material on the coatings.

For the above reasons, the Examiner is respectfully requested to withdraw the obviousness rejection applying Olin et al., Oldfelt et al. and Araki et al.

- 9) Referring to section 11 on page 6 of the Office Action, the rejection of claims 11 to 13 and 18 to 22 as obvious over Olin et al. in view of Araki et al. is respectfully traversed.

Claims 11 and 12 have been canceled because their subject matter has been incorporated into amended independent claim 1, which has been discussed above in comparison to Olin et al. and Araki et al. For the above reasons, this rejection cannot be maintained against independent claim 1 or its dependent claims.

Amended independent claim 13 is directed to an aircraft toilet system that includes a toilet bowl, a waste discharge arrangement, and a suction source adapted to induce a suction airflow into the toilet bowl. A nanocoating is provided on at least a portion of an inner bowl surface of the toilet bowl. The nanocoating is a thin film having a thickness in a nanometer range that has been formed by a nanotechnology process. As a result, the thin film has a character so as to provide a wetting angle of 0° to 25° with respect to a droplet of the urine and/or feces waste material. This toilet system excludes all means of supplying a flushing liquid into the toilet bowl.

The disclosures of Olin et al. and Araki et al. have been discussed above. Contrary to the Examiner's assertions, the Olin et al. toilet system expressly does use a flushing liquid (see col. 2, lines 22 to 28). Second, as admitted by the Examiner, Olin et al. would not have suggested the present nanocoating. In this regard the Examiner has cited Araki et al. Nonetheless, as discussed above, Araki et al. do not disclose a true nanocoating having a thickness in a nanometer range as formed by a nanotechnology process. Instead, the disclosed thickness range is hugely greater than the nanometer range, and even the thinnest film has a thickness of 0.01  $\mu\text{m}$ , which is out of the nanometer range as understood in the context of the present application (see page 19, lines 5 to 7).

Further contrary to present claim 13, the coatings according to Araki et al. do not provide a wetting angle of 0° to 25° with respect to a droplet of waste material. Instead, Araki et al. expressly disclose water contact angles of 105° to 115° (or 73°

to 102° in comparative examples) (see tables 18 and 19 in cols. 111 to 114). The water contact angles according to Araki et al. are apparently measured through the body of the droplet, so must be understood as the complement of 180° relative to the presently claimed wetting angle. In other words, the water contact angles according to Araki et al. ranging up to 115° appear to correspond to a wetting angle ranging down to 65°. That is a significantly worse wetting angle, i.e. a significantly worse repellent property, than the presently claimed wetting angle of 0° to 25°.

Thus, even a combination of Olin et al. and Araki et al. would not have suggested the combination of features recited in present claim 13. Furthermore, present dependent claim 18 recites that not only the toilet bowl itself but also a waste pipe, waste valve and/or waste collection tank additionally have such a nanocoating. There would have been no particular suggestion to provide such a nanocoating on both the toilet bowl as well as the waste pipe, waste valve and/or waste collection tank from the references. While Araki et al. disclose a huge range of apparently all conceivable applications of the disclosed coating films, those applications do not seem to include both a toilet bowl as well as waste pipe, waste valve and/or waste collection tank of an aircraft vacuum toilet system. Claim 21 recites an even lower limit on the wetting angle, namely being from 0 to 10° with respect to the waste droplet. Araki et al. especially would not have suggested such an extremely good waste repellent property.

Amended independent claim 22 is directed to an aircraft toilet system including a toilet bowl with a nanocoating less



than 10 nm thick and having an anti-adhesion character so as to provide a wetting angle of 0 to 25° with respect to a droplet of the waste material. This toilet system expressly excludes all means of supplying a flushing liquid into the toilet bowl. Instead, the toilet system includes air directing means that direct an airflow so as to assist in removing waste material from the toilet bowl toward the bowl outlet.

As discussed above, Olin et al. would not have suggested such a toilet system that entirely excludes all means of supplying a flushing liquid into the toilet bowl, and that has the presently claimed nanocoating. As also discussed above, Araki et al. do not disclose and would not have suggested such a nanocoating less than 10 nm thick with an anti-adhesion character providing a wetting angle of 0 to 25° with respect to a waste material droplet.

For the above reasons, the Examiner is respectfully requested to withdraw the rejection of claims 11 to 13 and 18 to 22 as obvious over Olin et al. in view of Araki et al.

- 10) Referring to section 12 on page 6 of the Office Action, the rejection of claims 14, 23 and 24 as obvious over Olin et al. and Araki et al. further in view of Oldfelt et al. is respectfully traversed.

Claim 14 depends from independent claim 13, which has been discussed above in comparison to Olin et al. and Araki et al. The disclosure of Oldfelt et al. has also been discussed above. None of these references would have suggested an aircraft toilet system as presently claimed, including an air jet arrangement to

"flush" the waste from the toilet, a nanocoating having the features recited in claim 13, and expressly excluding all means of supplying a flushing liquid into the toilet bowl. The two pertinent references of Olin et al. and Oldfelt et al. both expressly disclose the provision of a flushing liquid into the toilet bowl. The reference pertinent to the coatings, Araki et al., does not disclose and would not have suggested the presently claimed nanocoating. Thus even a combination of the references would not have made present claim 14 obvious.

Amended independent claim 23 is directed to an aircraft toilet system including a toilet bowl, an air jet arrangement to direct an airstream along a surface of the toilet bowl, a suction source adapted to induce a suction airflow through an air nozzle of the air jet arrangement to produce the airstream, a nanocoating less than 10 nm thick on the pertinent surface of the toilet bowl and/or the waste discharge arrangement, and expressly excluding all means of supplying a flushing liquid into the toilet bowl. For the reasons already discussed above, the references would not have suggested such a combination of features. Olin et al. and Oldfelt et al. expressly disclose the provision of a flushing liquid into the toilet bowl, and Araki et al. do not disclose a nanocoating less than 10 nm thick. Also, it is only with the combination of inventive features including the nanocoating and the air jet arrangement that it has become possible to achieve the exclusion of all means of supplying a flushing liquid into the toilet bowl. Thus, even if individual features of the invention would have been scattered among several references, there would have been no suggestion

toward the presently claimed combination and the significant improvement achieved thereby.

For the above reasons, the Examiner is respectfully requested to withdraw the rejection of claims 14, 23 and 24 as obvious over Olin et al., Araki et al. and Oldfelt et al.

11) Referring to section 13 on page 6 of the Office Action, the rejection of claims 15 to 17 as obvious over Olin et al., Araki et al. and Oldfelt et al. further in view of Martin is respectfully traversed. The Examiner has turned to Martin for allegedly disclosing a shroud and the features thereof as presently claimed. Contrary to present claim 15, Martin does not disclose and would not have suggested an air jet arrangement including at least one air nozzle that communicates from an air plenum space enclosed by a shroud, into the toilet bowl. Furthermore, claims 15 to 17 depend from claim 13, which has been discussed above in comparison to the references. For these reasons, the Examiner is respectfully requested to withdraw the rejection of claims 15 to 17 as obvious over Olin et al., Araki et al., Oldfelt et al. and Martin.

12) Referring to section 14 on page 7 of the Office Action, the rejection of claims 9 to 24 as obvious over all of the above references of Olin et al., Oldfelt et al., Martin and Araki et al. further in view of US Patent 5,997,961 (Feng et al.) is respectfully traversed. The Examiner has turned to Feng et al. for allegedly disclosing a coating in the nanometer range with a wetting angle of 0° to 10°.

Contrary to the Examiner's assertion, Feng et al. do not disclose the presently claimed wetting angle ranges of 0 to 25° and 0 to 10°. In Fig. 9 as well as col. 13, line 50 to col. 14, line 24, Feng et al. disclose a contact angle that appears to be the complement of a wetting angle. This contact angle begins at around 18° for a plain glass plate that is not treated with the coating according to Feng et al. (col. 13, lines 56 to 59). Then, with increasing coating treatment time, the contact angle increases to the range from 60° to below 80° (Fig. 9 and col. 13, line 50 to col. 14, line 24). Thus, the best possible contact angle disclosed by Feng et al. is less than 80°, which appears to correspond to a wetting angle of greater than 100°. That is very far off from the presently claimed wetting angle ranges of 0° to 25° and especially 0° to 10°.

Furthermore, the coatings according to Feng et al. are specialized coatings with hydroxyl groups on a substrate of glass or similar substrate materials on which hydroxyl groups may be generated (abstract; col. 4, lines 19 to 24). Such a glass material as a substrate would not have been suitable to form the substrate of a toilet bowl in an aircraft toilet system as presently claimed. For this reason, the teachings of Feng et al. would not have been regarded as pertinent to the present invention or to the other toilet systems according to the other prior art references. Toilet bowls in aircraft are not made of glass.

The other references have been discussed in comparison to all of the claims above. Even a combination of all of the


references with Feng et al. would not have suggested the inventive features as discussed above.

For these reasons, the Examiner is respectfully requested to withdraw the rejection of claims 9 to 24 as obvious over all of the above mentioned references.

- 13) The additional prior art made of record requires no particular comments because it has not been applied against the claims.
- 14) Favorable reconsideration and allowance of the application, including all present claims 1, 3 to 8, 13 to 18 and 21 to 24, are respectfully requested.

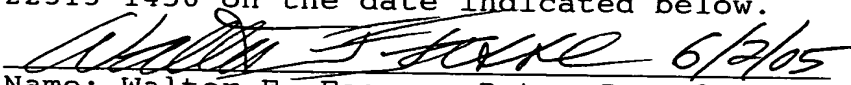
Respectfully submitted,  
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1 Replacement Sheet

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 6/2/05  
Name: Walter F. Fasse - Date: June 2, 2005